

REMEDY SCOPE ASSUMPTIONS

Corrective Measure Study Report - SWMU 05 Cooling Water Canal
CMS Report, PTPLLC, Peñuelas, Puerto Rico

Alternative 2 - Cap and Backfill Upper Canal with Vertical Wall

This alternative includes placing a geomembrane liner on the upper canal bottom and filling in the upper canal with offsite material from a commercial source. The upper canal will be filled from the north end approx. Station (-)2+00 down to the vehicle bridge at approx. Station 2+00, where a vertical sheet pile wall will be constructed across the canal to contain the sediment and backfill.

WORK PLANNING, REPORTING, PROJECT MANAGEMENT

Project management, work plan, completion reporting, O&M manual
Permitting, HSE, QC/QA, procurement, data management.

DESIGN

Design deliverables assumed for this project include: WP, BOD, Geotech and Surveys.
Design Deliverables include (a) Conceptual, (b) Preliminary, © Pre-Final, and (d) Final
A 75% design level set of documents will be developed for subcontract bidding.

CONSTRUCTION

Anticipated level of PPE for construction work is: Level D PPE
Anticipated period of performance for construction is: 4 months (April to July, 2015)
Turbidity control curtains = 300 linear ft.
Debris Removal and Clearing
Installation of Sheet pile = 960 sq. ft.
Installation of membrane = Includes 46,000 sq. ft. (1.1 acres) including folds and anchor trenches. (Production Rate = 8,240 s.f. per day). **Superseded by RWEC 11/10/2014 estimate update to include 52,800 sq.ft.**
Installation of Fill Materials = 4,066 cy Total = 2,066 cy of caliche material plus 2,000 cy of topsoil material. (Production Rate for Fill Operations = 285 cy per day with Landside Crew and Equipment).
Installation of Armor Stone = 500 SF of geotextile and 74 cubic yards of armor stone.
Installation of 0.8 acres of mangroves.
Installation of Erosion controls = 8,800 SF of geotextile and 300 CY of stone.
Potential hazardous waste consists of PPE and decontamination water, will be handled by OMI to Clean Harbors.
Additional remediation costs due to occurrence of weather events are not included.
The Waste Disposal Allowance Line Item includes 2 rollofts with 10 tons per rolloff. Material will be shipped for Incineration in Texas (T&D = \$1,000/ton).

OPERATIONS AND MAINTENANCE

O&M Period is anticipated to be 30 years with Annual Inspections
O&M Period includes 4 Bathymetric Surveys (Years 1, 5, 15, and 25)
O&M Period includes 4 Topographical Surveys (Years 1, 5, 15, and 25)
O&M Period includes Armor Protection & Erosion Maintenance (Years 1, 5, 10, 15, 20, 25, and 30)

MISCELLANEOUS

All costs are presented in current year dollars
All costs are based on current regulations

Alternative 3 - Cap and Backfill Upper Canal with Vertical Wall and Monitoring of Lower Canal

As in Alternative 2, this alternative includes placing a geomembrane liner on the upper canal bottom and filling in the upper canal with offsite material from a commercial source. The upper canal will be filled from the north end approx. Station (-) 2+00 down to the vehicle bridge at approx. Station 2+00, where a vertical sheet pile wall will be constructed across the canal to contain the sediment and backfill. In addition, this alternative provides for monitoring of the lower canal for stability of the benthic community.

WORK PLANNING, REPORTING, PROJECT MANAGEMENT

Project management, work plan, completion reporting, O&M manual
Permitting, HSE, QC/QA, procurement, data management.

DESIGN

Design deliverables assumed for this project include: WP, BOD, Geotech and Surveys.
Design Deliverables include (a) Conceptual, (b) Preliminary, © Pre-Final, and (d) Final
A 75% design level set of documents will be developed for subcontract bidding.

CONSTRUCTION

Anticipated level of PPE for construction work is: Level D PPE
Anticipated period of performance for construction is: 4 months (April to July, 2015)
Turbidity control curtains = 300 linear ft.
Debris Removal and Clearing
Installation of Sheet pile = 960 sq. ft.
Installation of membrane = Includes 46,000 sq. ft. (1.1 acres) including folds and anchor trenches. (Production Rate = 8,240 s.f. per day). **Superseded by RWEC 11/10/2014 estimate update to include 52,800 sq.ft.**
Installation of Fill Materials = 4,066 cy Total = 2,066 cy of caliche material plus 2,000 cy of topsoil material. (Production Rate for Fill Operations = 285 cy per day with Landside Crew and Equipment).
Installation of Armor Stone = 500 SF of geotextile and 74 cubic yards of armor stone.
Installation of 0.8 acres of mangroves.
Installation of Erosion controls = 8,800 SF of geotextile and 300 CY of stone.
Potential hazardous waste consists of PPE and decontamination water, will be handled by OMI to Clean Harbors.
Additional remediation costs due to occurrence of weather events are not included.
The Waste Disposal Allowance Line Item includes 2 rollofts with 10 tons per rolloff. Material will be shipped for Incineration in Texas (T&D = \$1,000/ton).

OPERATIONS AND MAINTENANCE

O&M Period is anticipated to be 30 years with Annual Inspections
O&M Period includes 4 Bathymetric Surveys (Years 1, 5, 15, and 25)
O&M Period includes 4 Topographical Surveys (Years 1, 5, 15, and 25)
O&M Period includes Armor Protection & Erosion Maintenance (Years 1, 5, 10, 15, 20, 25, and 30)
Long term monitoring of lower canal incl. sediment sampling and analyses (Years 1, 5, 15, and 25)

MISCELLANEOUS

All costs are presented in current year dollars